

REMARKS/ARGUMENTS

The withdrawal of Claims 6, 11 and 18 following Applicants' election with traverse of the article claims is noted. The method claims are retained because it is believed that once the article claims are found allowable, the method claims should be rejoined and allowed as well. The claims before the Examiner at present are claims 1-5, 7-10, and 12-17.

The rejection of Claims 12 and 17 under the second paragraph of 35 U.S.C. §112 is noted. Claim 15 has been amended to address the Examiner's comment regarding lack of antecedent basis for "the substrate". A further minor change has been made in Claim 15 and other claims well.

It was stated that Claim 12 was confusing but the Examiner did not indicate in what way the claim was not understood. Applicants respectfully submit that the claim as filed is proper and understandable. The claim calls for a hard coating film containing a cubic boron nitride film as an outermost surface layer and a layer that contains boron and nitrogen wherein the former is stacked in a state of having been nucleated from the latter. The claim also specifies the ratio of N to B in the boron- and nitrogen-containing layer and that there is present therein at least one element from groups 4A, 5A, and 6A, and Si in a designated proportion. The claim thus recites a hard coating film with two layers having the properties stated in the claim. The Examiner is requested to telephone the undersigned if, following the above explanation, she believes that changes are required in Claim 12.

The rejection of all examined claims (1-5, 7-10 and 12-17) under 35 U.S.C. §102 as anticipated by Inspektor '015 is respectfully traversed. The Office Action states that the reference discloses "the claimed boron carbide and boron nitride coating on a substrate through the claimed interlayers." Applicants respectfully disagree. It is initially noted that the embodiments of independent Claims 1 and 7 are different from the embodiment of independent Claim 12. With respect to Claims 1 and 7 (and the claims depending therefrom),

the hard coating film is stated to contain as a layer between the first layer on the substrate side containing at least one group 4A, 5A and 6A metal and a boron- and carbon-containing surface layer, a graded composition layer of a thickness of at least 0.05 μm in which the content of boron and carbon “changes continuously or stepwise from the first layer side toward the surface layer side.” Such a control of the boron and carbon content is neither taught nor suggested in Inspektor ‘015. While the reference at column 3, lines 26-47 contains discussion of “intermixed layer,” there is no mention of a change in B and C content continuously or stepwise from what may be regarded as the first layer side toward what may be regarded as the surface layer side. The need to control the concentration in the indicated manner to achieve the purposes of the instant invention is clearly established by the working examples in the present case some of which are comparative examples. The Examiner is directed to Examples 1 and 2 in Table 1 on page 29 and Examples 1, 2, 6, 7 and 9 in Table 2 on page 36. These examples are the comparative examples. As explained at page 3, lines 14 to 16, and the paragraph bridging pages 37 and 38, these examples do not meet the requirements of the present invention; all these examples show degradation of adhesion. See also the comments at page 38, lines 2 to 5, regarding example nos. 7 and 9. The reference does not teach or suggest the concepts claimed. Moreover, the particular arrangements recited in Claim 12 regarding a cubic boron nitride film and a B- and N-containing layer and the relationship stated therefor are not taught or suggested by the reference and the rejection should be withdrawn.

The rejection of Claims 1-5 under 35 U.S.C. §102 as anticipated by Doll ‘249 is also respectfully traversed. It is asserted that the reference teaches the claimed boron carbide coating on a substrate through the claimed interlayers but this reference, as Inspektor ‘015, does not specify a continuous or stepwise change in concentration from one indicated layer to the other as required by instant Claim 1. The discussion of “a gradual transition” in the

Abstract does not teach or suggest the invention claimed herein and the rejection should be withdrawn as well.

The rejection of all examined claims under 35 U.S.C. §102 as anticipated by Ebersbach DD349 or Fabian DD826 or GB030 or DE662 or Inspektor EP861 is also respectfully traversed. It is noted initially that the only reference discussed in that portion of the Office Action is the last one. It is noted also that the references were cited by an Examiner in the German counterpart application but there is no proper teaching in any of the cited references of the particular controls required in each of independent Claims 1, 7 and 12 and the claims depending therefrom. It is again pointed out that the nature of the subject matter of Claim 12 differs substantially from that found in instant Claims 1 and 7. In each instance, the claims patentably define over the references and the rejection should be withdrawn also.

Lastly, Applicants respectfully traverse the rejection of all examined claims under 35 U.S.C. §102 as anticipated by EP044. It is asserted in the Office Action that the subject matter of the instant claims is taught by the reference. Here again, EP044 describes a boron carbide layer but there is no proper teaching or suggestion in the reference regarding the controls called for in each of Claims 1, 7, and 12 herein. The rejection should be withdrawn.

The Examiner is thanked for acknowledging receipt of certified copy of the priority document and for listing references provided with the Information Disclosure Statements.

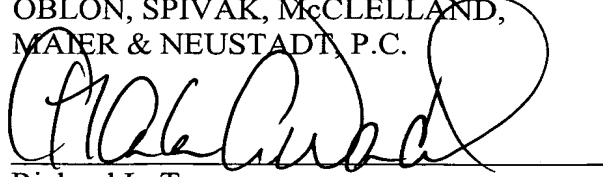
In view of the foregoing revisions and remarks it is respectfully submitted that the application is in condition for allowance and a USPTO paper to those ends is earnestly

Application No. 10/743,735
Reply to Office Action of February 9, 2006.

solicited. The Examiner is requested to telephone the undersigned if additional changes are required in the case prior to allowance.

Respectfully submitted,

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A large, stylized handwritten signature in black ink, likely belonging to Richard L. Teanor, is written over the printed name and firm name.

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